

Temperature dependence of the absorption of ultraviolet light by oxygen. Kh. B. Sterin and M. M. Sushchinskii. *Bull. acad. sci. U. R. S. S., Ser. phys.* 4, 103-5 (1940). — The increase of the absorption coeff. of the air in the neighborhood of 1850 Å. with temp. is mainly due to the effect of O<sub>2</sub>. The dependence of the absorption of O<sub>2</sub> on the temp. was measured for the wave lengths 1834 Å. and 1802 Å., and the temp. interval 250-650°. The measurements show that, within the error limit, the increase of the absorption is in accordance with Beer's law, and can be explained by the increase of the number of mols. in the higher oscillatory states. Roksalana Gornow

ASB 55A METEOROLOGICAL LITERATURE CLASSIFICATION

Optical investigation of hydrocarbons. IV. Raman spectra of cycloparaffins. P. A. Barabov, Kh. E. Serin, I. P. Bulanova, O. P. Solovova, M. B. Tutova, I. I. Iul'ina, and B. A. Karazukin. P. N. Lebedev Phys. Inst. and Inst. Org. Chem. Acad. Sci. U.S.S.R., Moscow, and Moscow State Univ. *Dokl. Akad. Nauk S.S.S.R. Otdel. Khim. Nauk* 1946, No. 1, 7-18, cf. C. A. 38, 1427; 42, 42x5. (1) The Raman spectra of the following compounds in the range 120-30° were dealt with the same apparatus with 4358 Å., and are therefore strictly consistent. Purity of the compounds is characterized by data of b.c. (unless otherwise stated),  $\delta_{\text{H}_2\text{O}}$ , and  $d_4^{20}$  following the same intensities (in parentheses), following the wave number  $\nu_{\text{max}}$  as expressed relative to the 862 cm<sup>-1</sup> line of cyclohexane:  $\nu_{\text{max}} = 2.60$ . Intensities higher than 5 were dealt by photographic photometry, those below 5 visually. A question mark means that the line might be but a repetition of known line under different excitation. Lines printed in italics form bands. 1. Cyclopentane (48.4745 mm.,  $\delta_{\text{H}_2\text{O}}$  1.4084,  $d_4^{20}$  0.7400) 257 (0), 291 (0), 628 (0, b), 731 (0), 889 (3, b), 901 (0), 1004 (0), 1043 (30, b), 1103 (1), 1154 (0), 1168 (0), 1183 (3), 1199 (3), 1227 (3), 1249 (3), 1264 (3), 1283 (3), 1295 (3), 1311 (1), 1449 (34, b), 1486 (5), 2027 (0), 2900 (0), 2870 (170), 2900 (30, background), 2921 (30, background), 3037 (210), 2949 (210), 3060 (30, b). II. Methylcyclopentane (71.5720754), 1.4005, 0.7400, 403 (0), 430 (0), 443 (5), 534 (18), 583 (0), 584 (0), 708 (3), 800 (0), 822 (2), 839 (16, b), 849 (16, b), 890 (33), 916 (8), 931 (8), 942 (9), 1021 (9), 1057 (0), 1083 (8, b), 1164 (3), 1183 (3), 1194 (3), 1221 (0), 1253 (0), 1275 (2),

[illegible]

1120(7), 8), 1163(2), 1181(2), 1193(2), 1211(0), 1245(0),  
1272(2), 1301(10), 1311(0), 1310(34), 1333(9), 1475(3),  
1518(0), 2063(0), 2140(0), 2840(7), 2841(0), 2874  
(12), 2880(0), 2910(0), 2930(0), 2940(0), 2941(0), VII  
(12), 1295(18), 1305(1), 1381, 1410, 0.7852  
Arylcyclopentane (1295(18), 1305(1), 1381, 1410, 0.7852  
252(0), 276(10), 301(0), 322(0), 403(0), 625(0), 714(0),  
751(0), 814(0), 843(3), 871(1), 890(2), 930(2),  
961(2), 981(1), 1000(0), 1028(5), 1050(0), 1081(7), 11  
1101(3), 1128(5), 1130(0), 1174(0), 1340(0), 1210(0), 12  
1275(0), 1301(12), 1305(2), 1311(30), 1332(4), 2063(0),  
2068(0), 2131(0), 2140(0), 2840(0), 2841(10), 2905(20),  
2906(0), 2921(20), 2930(10), 2932(0), XIV *trans*  
1,2-Dimethylcyclopentane (895(30), 1409(2), 1417, 0.7825)  
251(1), 262(0), 278(0), 320(0), 301(0), 497(35),  
527(5), 590(0), 607(1), 721(0), 760(2), doublet),  
789(0), 861(3), 890(34), 957(5), 1005(1), 1022(5),  
1081(3), 1117(0), 1186(3), 1205(3), 1283(2),  
1301(2), 1340(5), 1360(3), 1457(4), b, doublet), 2076(0),  
2726(4), 2844(17), 2845(190), 2900(100), 2924(150),  
2957(20), doublet), XV *cis* 1,2-Dimethylcyclopentane  
(984(38), 14215, 0.7903) 201(0), 287(0), 334(4),  
b), 372(2), 400(10), 501(0), 585(3), 764(4), doublet),  
847(3), 871(0), 888(38), 942(7), 950(7), 981(7),  
1019(15), 1041(7), 1080(5), 1107(7), 1109(4),  
1192(0), 1265(1), 1295(7), 1310(7), 1341(0),  
1378(2), 1412(1), 1420(0), 2731(0), 2860(220), 290  
(280), 2920(20), 2931(10), 2901(240), N: 1,3-14  
methylcyclopentane (895(30), 1409(2), 0.7490) (mixt.  
of *cis* and *trans*) 213(0), 272(0), 358(0), 373(3), 409(0),  
420(3), 514(13), 549(3), 591(3), b, doublet), 726(0),  
801(1), 828(20), 878(0), 950(3), 985(8), 1021(3), 1188(2),  
1041(3), 1085(0), 1101(3), 1140(11), 1162(11), 1188(2),  
1211(3), 1298(2), 1314(8), 1340(5), doublet),  
1457(4), 2727(4), 2847(10), 2907(220), 2905(100),  
2926(220), 2930(220), XI Cyclohexane (80.6-80.7,  
14267, 0.7710) 384(7), 427(12), 802(250), 1029(92),  
1158(10), 1207(74), 1348(10), 1429(2), 1445(73), 1460(2),  
2114(0), 2158(0), 2835(2), 2836(12), 2900(11), 2852  
(100), 2900(100), 2905(12), 2921(300), 2941(340), XII

Methylcyclohexane 100(8), 14223, 0.7903) 312(0), b),  
408(14), 416(24), 522(0, possibly belonging to traces of  
PhMe), 540(21), 751(0), 770(0), 787(0), PhMe 7),  
845(18), 971(10), 1084(0), PhMe 7), 1081(31), 1001(2),  
1080(13), b, doublet), 1104(14), 1205(0), 1290(20),  
1296(20), 1305(11), 1444(16), doublet), 1365(2), b),  
1443(34), 1606(5), 2040(1), 2730(2), 2844(240),  
2850(240), 2841(100), 2801(100), 2910(270), 2935(200),  
2955(100), b) XIII Ethylcyclohexane (1312, 14334,  
0.7883) 210(0), 340(0), 301(22), 427(3), 445(8), 450(10),  
511(12), 575(2), 736(20), 771(2), 795(31), 819(0),  
842(21), 872(0), 916(2), 988(0), 1009(17), 1034(50),  
1002(2), 1080(5), 1097(5), 1161(10), 1192(5), 1202(40),  
1206(8), 1306(8), 1305(2), 1346(6), 1463(10), b),  
2004(4), 2000(2), 2842(240), 2855(240), 2880(100),  
2898(50), 2910(100), 2923(180), 2930(240), 2952(50), b),  
XIV 1,2-Dimethylcyclohexane (125.0-125.5, 14315,  
0.7894) (mixt. of *cis* and *trans*) 284(0), 302(2), 362(2),  
415(13), 441(7), 499(50), 548(8), 590(1), 729(35), 770  
(31), 820(0), 841(0), 858(5), 945(1), 1047(0), 106  
(21), 1056(1), 1077(10), 1094(10), 1164(18), doublet),  
1221(10), 1256(2), doublet), 1260(0), 1393(9), 1318(2),  
1344(10), 1354(10), 1390(0), 1416(38), 1400(30), 2080(0),  
2721(0), 2844(100), 2850(100), 2873(05), 2890(50),  
2911(10), 2914(20), 2940(0), 2975(10), b) XV  
1,3-Dimethylcyclohexane (120.1-120.8, 14285, 0.7734)  
(mixt. of *cis* and *trans*) 256(1), 340(0), 1041(1), 1190(20),  
440(8), 450(8), 516(11), 508(0), 620(2), 711(21), 771(37),  
818(0), 801(2), 933(3), b, doublet), 942(7), 1084(1),  
1050(37), 1078(0), 1095(0), 1110(1), 1101(21), 1180(0),  
1220(7), 1254(2), 1270(10), 1306(6), 1337(10), 1357(8),  
1410(27), 1461(5), 2040(0), 2046(1), 2722(0), 2842  
(130), 2888(180), 2895(50), 2912(10), 2920(230), 2931  
(12), b) XVI *trans*-1,4-Dimethylcyclohexane (119.5-  
119.8, 14223, 0.7677) 251(0), 315(0), 376(35), 429(0),  
454(10), 475(14), 507(0), 547(0), 590(0), 657(2), 760  
(120), 786(7), 849(0), 926(2), 1033(12), 1055(1),  
1002(57), 1104(0), 1106(12), 1180(12), 1230(20), 1264(1),  
1305(11), 1318(21), 1401(1), 1436(8), 1460(4),  
2050(0), 2720(2), 2748(1), 2815(180), 2898(150), 2901

2011(100), 2026(210), 2031(8), b). XVII. 1,5,5-Trimethylcyclohexane (1378(100), 1397(1), 14280, 0.7500 (200), b), 250(20), 31500, 363(10), 408(90), 436(18), 510(6), s), 536(2), 632(1), 788(13), 845(30), s), 850(8), 900(2), b), 943(1), 1005(12), 1025(0), 1047(35), 1071(1), 1097(0), 1100(1), 1177(50), 1237(1), b), 1272(22), 1320(1), 1312(37), s), 1363(10), s), 1380(1), 1438(12), 1462(58), 2600(0), 2673(0), 2721(5), 2807(100), 2867(210), 2892(40), 2912(140), 2928(120), 2956(140). XVIII. Cyclopentane (11618(739), 14440, 0.8453) 319(11), b), 352(11), b), 396(0), s), b), 437(0), 486(0), 513(0), 652(0), 702(0), 736(140), 770(1), 847(8), 1007(37), b), 1041(14), 1121(11), 1164(0), 1204(0), 1220(0), 1285(27), 1345(5), 1361(5), 1444(62), 1463(0), 2620(0), 2738(0), 2950(3), b), 2961(0), 2951(100), 2962(100), 2840(130), 2917(220), 2935(220), 2951(40), b). XIX. Methylcycloheptane (1323(750), 14401, 0.8901) 250(0), 264(5), 315(5), 365(4), b), 427(12, doublet), 441(2), 506(5), 521(2), 540(10), 709(30), 720(50), 751(15), 792(4), 813(1),

843(0), 950(6), b), 967(6), b), 1000(8), 1033(12), 1055(8, doublet), 1062(8), 1123(4), b), 1101(12), 1202(4), b), 1256(4), s), 1283(14, doublet), 1319(12), 1301(10), 1442(44), 1458(3), b), 2087(2, b), 2717(2), 2848(200), 2861(200), 2874(50), 2901(100), 2900(150), 2922(200), 2937(200), 2957(100), b). XX. Ethylcycloheptane (1024(780), 14470, 0.8118) 200(0), 2015(1), 3115(1), 331(2), b), 378(2), b), 411(0), 413(0), 505(5), 541(5), 549(2), 711(18), 721(18), 731(3), 777(8), 843(4), 847(0), 947(24), b), 996(20), 1007(25), 1033(12), 1080(12), 1126(5), 1145(8), 1157(4), 1108(3), 1211(2), 1250(0), 1284(21), 1293(5), 1341(3), b), 1450(0), b), 1445(50), 1460(15), b), 2085(0), 2736(0), 2851(180), 2876(50), 2880(50), 2900(150), 2923(220), 2937(220), 2961(50), b). (2) In substituted cyclopentanes, the 890 cm<sup>-1</sup> line probably corresponding to vibrations of the ring, repeats itself and its intensity decreases regularly with increasing size of the substituent; however, this frequency is absent in X. From the scant material on cyclohexanes and cycloheptanes, no common characteristic frequencies are as yet apparent. (3) From the present data, supplemented by those of Kohlrausch for C<sub>4</sub>H<sub>8</sub> and for cyclohexane, the frequency of the ring in polymethylene series is seen to decrease regularly with increasing no. of C atoms; absence of a singularity at C<sub>6</sub> indicates that there is no relation between the frequency and the stress in the ring, as assumed by Kohlrausch. (4) Some discrepancies with previous data of the Raman spectra of I, XI, and XII are pointed out.

X. Thon

ASH-SEA METALLOGICAL LITERATURE CLASSIFICATION

4

Determination of the half width of the lines of combination scattering with the interferometer of Fabry-Perout. Kh. B. Sterin. *Bull. acad. sci. U.R.S.S., Ser. phys.* 11, 345-7(1947).—It is necessary, in order to measure the width of such lines, to have a light source with lines having a half width below  $1 \text{ cm}^{-1}$  and interferometric standards having more than  $5 \text{ cm}^{-1}$  dispersion. The author superposed on a standard mercury lamp type PRA burning on line voltage a high potential, lowering simultaneously the lamp current considerably. The dispersion of Fabry-Perout standards made by the Zeiss Works was increased by addn. of Invar rings. The author measured the half width of several lines belonging to  $\text{CCl}_4$ , benzene, cyclohexane, and 2,2,4-trimethylbutane. S. Pakswet

ASH-51A METALLURGICAL LITERATURE CLASSIFICATION

STERIN, KH. E.

Jul/Aug 47

USSR/Physics

Spectrum Analysis

Hydrocarbons, Spectrum Analysis

"Optical Method of Investigating Hydrocarbons," P. A. Bazhulin, Kh. E. Sterin, 5 pp

"Iz Ak Nauk, Ser Fiz" Vol XI, No 4

Describes the results obtained from a series of investigations on the dispersion spectra of several hydrocarbons. It was very difficult to obtain pure hydrocarbons. This is the first report made on the study of alkenes. Submitted at the Inst of Physics imeni P. N. Lebedev, Acad Sci USSR.

PA 28T71

Sep 48

USSR/Physics  
Optics  
Spectra Analysis

"The Line Spectrum of Dispersion Lines in a Benzene-Toluene Mixture," Kh. Ye. Sterin, Optics Lab, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXII, No 2

Studies influence of admixtures on sharpness of doublet in line spectrum, and thus verifies assumption concerning the decrease of tau in mixtures. Tau is a parameter, having the dimension of time and inversely proportional to the

36/49771

Sep 48

USSR/Physics (Contd)

"speed of reaction," in relaxation theory of absorption of ultrasonic waves in liquids. Submitted by Acad S. I. Vavilov, 13 Jul 48.

36/49771

STERIN, KH. YE.

PA 36/49771

CA

...contour and the width of the lines  $\Delta\sigma = 902 \text{ cm}^{-1}$  of benzene and  $\Delta\sigma = 802 \text{ cm}^{-1}$  of cyclohexane excited by Hg line  $\lambda = 4350.3 \text{ \AA}$ . The width of the line 902 was found to be  $1.8 \pm 0.2 \text{ cm}^{-1}$ ; of line 802,  $1.9 \pm 0.3 \text{ cm}^{-1}$ . Photometric measurements show that line width is the same in the liquid and the vapor phase. Several possible causes of line broadening are discussed and rejected as not being in agreement with the results. S. Pakswar

1951



STERIN, KH. Ye

USSR/Physics - Raman Spectra

Sep/Oct 53

"Width of Raman Spectra Line in Vapor," I. I. Sobelman, Phys Inst im Lebeden, Acad Sci USSR

Iz Ak. Nauk, Ser. Fiz, Vol 17, No 5, pp 554-560

Kh. Ye. Sterin investigated the problem (Izv AN, Ser Fiz 14 (1950) by measuring line widths of oscillations of benzene and cyclohexane. Author investigates further causes and laws governing the widening of Raman spectra lines in vapor with increasing pressure. He derives and solves corresponding eqs. Indebted to G. S. Lansberg.

274T84

TERIN, Kh. Ye.

U S S R .

Determination of individual hydrocarbons in gasolines by the combined method. VI. Karachukhur gasoline.

D. A. Kazanskiy, G. S. Landsberg, A. F. Ilate, A. L. Liberman Ye. A. Mikhaylova, Kh. Ye. Terin, T. F. Bulanova, G. A. Tarasova, and V. T. Alekseyan (n.D. Zelinskiy Inst., Org. Chem., Acad. Sci. U.S.S.R., Moscow). Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk, 1954, 1053-66; cf. C.A. 45, 7342b. — The combination of distn. No 6

chromatography, and Raman spectroscopy applied to a sample of Karachukhur gasoline (150° end point) was successful in identifying 85.4% of the hydrocarbon compn., showing the presence of 63 hydrocarbons. The gasoline contained 16.37% aromatic, and approx. equal ants. of aliphatic and naphthenic hydrocarbons; about 40% of the paraffins are normal alkanes. The ratio of cyclopentane derivs. to cyclohexane derivs. is 0.44.

G. M. Kosolapoff

USSR/ Physics - Instruments

Card 1/1      Pub. 43 - 32/97

**Authors** : Abramson, I. S.; Sterin, Kh. E.; and Mogilevskiy, A. N.

**Title** : Photoelectric methods of recording spectra and the installation at the laboratory of the Commission on Spectroscopy

Periodical : Izv. AN SSSR, Ser. fiz. 18/2, 264-265, Mar-Apr 1954

**Abstract** : A photoelectric arrangement for the registration of combined diffusion spectra which operates on the AC-current amplification principle is described. Registration of the spectrum is realized by means of a cathode ray tube, the vertically deflecting plates of which are fed the voltage of the measuring signal and the horizontal plates are fed a voltage proportional to the angle of deflection of the spectrograph prisms. The ISP-51 spectrograph is the major element of the photoelectric installation. Automatic amplification control is employed for the purpose of eliminating the effect of light source (mercury lamp) intensity fluctuations.

Institution : , , , , . . . . .

Submitted : .....

STERIN, Kh. Ye.

USSR/Physics - Spectral analysis

Card 1/1      Pub. 43 - 34/62

Authors      : Aleksanyan, V. T.; Lukina, M. Yu.; Sterin, Kh. Ye.; and Kazanskiy, B. A.

Title        : Combined diffusion spectra of certain hydrocarbons of the cyclobutane series

Periodical   : Izv. AN SSSR. Ser. fiz. 18/6, 699-702, Nov-Dec 1954

Abstract     : The results obtained in studying the spectra of nine cyclobutane hydrocarbons are analyzed. An interpretation of the various frequencies and their forms (trans-cis, etc.) is given. Two references: 1 USA and 1 USSR (1943-1954). Table.

Institution   : Acad. of Sc., USSR, The N. D. Zelinskiy Inst. of Organ. Chem. and the Commission on Spectroscopy

Submitted    : .....

STERIN, Kh. Ye.

USSR/ Physics - Spectral analysis

Card 1/1 Pub. 43 - 36/62

Authors : Kazanskiy, B. A.; Landsberg, G. S.; Aleksanvan, V. T.; Bulanova, T. F.;  
Lieberman, A. L.; Mikhaylova, Ye. A.; Plate, A. F.; Sterin, Kh. Ye.;  
and Ukholin, S. A.

Title : Analysis of aromatic ligroin parts b the combined diffusion spectra

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 704-706, Nov-Dec 1954

Abstract : Brief report is presented on the Method and some results obtained  
during individual and close-group analysis of primary and secondary  
aromatics of ligroin. Analysis of results obtained showed that the  
basic ligroin (taken from the Embesk Petroleum Sources) contained  
alkyl substitutes of benzene and cyclohexane with short term substituting  
radicals. Three references: 1 USA and 2 USSR (1947-1955). Tables.

Institution : Acad. of Sc., USSR., The N. D. Zelinskiy Inst. of Organ. Chem. and  
the Commission on Spectroscopy

Submitted : .....

STERIN, K. Ye.

USSR.

/ Catalytic transformations of *n*-heptane and *n*-octane in the presence of platinized carbon. R. A. Kazanski, A. J.

Liberman, T. F. Bulanova, V. T. Aleksanyan, and Kh. E. Sterin. Doklady Akad. Nauk S.S.S.R. 95, 77-80 (1964).  
Passage of *n*-heptane over Pt-C at 310° gave 85.0% catalyzate contg. 4-6% aromatics and a small amt. of unsatd. hydrocarbons; the dearomatized residue apparently contained cyclic products, and Raman analysis indicated the presence of 10% *trans*-1,2-dimethylcyclopentane,  $\text{PrCH-MeEt}$ , possibly  $\text{BuCHMe}$ ,  $\text{CHMe}$ , and  $\text{PrCHMeCHMe}$ . Similar treatment of *n*-octane gave analogous results with the catalyzate (88.3%) contg. small amts. of *n*-propylcyclopentane and *cis*-1-methyl-2-ethylcyclopentane.

G. M. Kosolapoff

Sterin

U S S R

*Abstract*  
Catalytic cyclization of isooctane with formation of a five-membered ring. B. A. Kazan'kil, A. L. Liberman, V. T. Aleksanyan, and Kh. E. Sterin (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 95, 281-4 (1954); cf. *ibid.* 77-80. -- Isooctane (31 g.) passed over 20% Pt-C at 310° yielded a catalyzate which was freed from the aromatic content with silica gel. The aromatic portion consisted of 15% MePh, 35% *p*-xylene, and 50% *m*-xylene. Refractometry showed that the residue contained some 30% cyclic hydrocarbons. Fractionation of the material gave about 5.6 g. 1,1,3-trimethylcyclopentane, identified by the Raman spectrum (cm.<sup>-1</sup>). Traces of 1,1-dimethylcyclohexane were detected by the presence of Raman line 705 cm.<sup>-1</sup>. G. M. Kosolapoff

KIBISOV, G.I., kandidat khimicheskikh nauk; STERIN, Kh.Ye., kandidat fizikomatematicheskikh nauk; VREDEN-KOBETSKAYA, T.O., mladshiy nauchnyy sotrudnik; MANDEL'SHTAM, S.L., doktor fiziko-matematicheskikh nauk, redaktor; GUROV, K.P., redaktor; SOKOLOVA, T.F., tekhnicheskiiy redaktor.

[Spectrum analysis; annotated list of Soviet works on spectrum analysis, 1931-1950] Spektral'nyi analiz; annotirovannyi ukazatel' sovetskikh rabot po spektral'nomu analizy, 1931.-1950. Moskva, 1955. 181 p. (MLRA 8:12)

1. Akademiya nauk SSSR. Komissiya po spektroskopii.  
(Bibliography--Spectrum analysis)



ALEKSANYAN, V.T.; STERIN, Kh.Ye.; LIBERMAN, A.L.; MIKHAYLOVA, Ye.A.  
PRYANISHNIKOVA, M.A.; KAZANSKIY, B.A.

Report no.8. Raman spectra of a few aromatic hydrocarbons.  
Izv.AN SSSR,Ser.fiz.19 no.2:225-233 Mr-Apr '55. (MLRA 9:1)

1.Komissiya po spektroskopii i Institut organicheskoy khimii  
imeni N.D.Zelinskogo Akademii nauk SSSR.  
(Tartu--Spectrum analysis--Congresses)

I-16

USSR /Chemical Technology. Chemical Products  
and Their Application

Treatment of natural gases and petroleum.  
Motor fuels. Lubricants.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31949

Author : Rumyantseva Z. A., Gilimzanova F.M.,  
Sterin Kh. Ye.

Inst : Academy of Sciences Tadzhik SSR

Title : Specific Hydrocarbon Composition of High-Sulfur  
Gasoline of Direct Distillation

Orig Pub: Tr. AN TadzhSSR, 1955, 41, 45-58

Abstract: The combined method of Landsberg-Kazanskiy for  
the study of specific hydrocarbon composition  
is applied in the study of gasoline obtained by

Card 1/3

USSR /Chemical Technology. Chemical Products  
and Their Application

I-16

Treatment of natural gases and petroleum.  
Motor fuels. Lubricants.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31949

hexane hydrocarbons with short, unbranched side  
chains. Sulfur compounds are concentrated in  
the aromatic portion of the gasoline.

Card 3/3

STERIN, Kh, YE.

Hydrogenation of isopropenylcyclopropane with palladium  
black. B. A. Kazanskii, M. Yu. Lukina, A. I. Malyshev,  
V. I. Aleksanyan, and Kh. Ye. Sterin (N. D. Zelinskii  
Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Izvest.  
Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 35-41  
*Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 35-41  
(Engl. translation).—Hydrogenation of isopropenylcyclo-  
propane (I), at room temp. and pressure in EtOH over Pd  
black results in addn. of 2 moles H and formation of 2-methyl-  
methylpentane, through intermediate formation of 2-methyl-  
- and -2-penten-2-ones. Under the conditions of the reaction  
the latter 2 substances are mutually isomerizable. Pro-  
longed contact of I with reduced Pd black does not produce  
any change in I. The substances were identified by Raman  
spectra which are as follows. I (from dehydration of  
diethylcyclopropylcarbinol)  $\nu_{\text{max}}$  70.5 $\mu$ ,  $\mu_{\text{max}}$  1.4255,  $\delta_{\text{max}}$   
0.7517: 234(2), 268(36), 294(0), 315(1), 343(0), 359(0),  
394(16), 416(26), 474(66), 580(15), 531(12), 695(12),  
714(41), 720(19), 797(6), 818(25), 890(60), 900(80), 936(0),  
992(37), 996(9), 1020(17), 1035(3), 1049(3), 1089(16),  
1100(14), 1169(3), 1192(110), 1225(5), 1238(6), 1293(16),  
1318(2), 1340(4), 1369(4), 1391(50), 1403(10), 1428(64).

chem 5

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Kazanskiĭ, B. A., Lukina, M. Yu. . .

1459(43), 1503(2), 1635(114), 1640(90), 2854(10), 2870(10),  
2898(20), 2917(45), 2935(10), 2973(20), 2988(60), 3013(140),  
3083(60). 2-Methyl-1-pentene,  $b_{\text{ref}}$  61.4°,  $n_D^{20}$  1.3918,  $d_4^{20}$   
0.6802: 199(0), 267(1), 292(0), 327(7), 349(7), 372(0),  
400(20), 414(1), 428(3), 447(5), 469(1), 497(4), 527(14),  
538(3), 562(0), 622(0), 676(1), 703(12), 738(17), 768(1),  
794(1), 818(24), 826(31), 865(1), 890(18), 899(14), 930(1),  
964(3), 978(1), 995(9), 1027(3), 1048(14), 1079(1), 1102(17),  
1149(1), 1175(1), 1200(1), 1215(12), 1225(3), 1259(3),  
1271(0), 1301(7), 1327(3), 1351(1), 1383(22), 1411(30),  
1428(46), 1453(34), 1651(76), 2818(10), 2843(170),  
2938(130), 2965(80), 2984(80), 3001(30), 3020(5), 3077(25).  
2-Methyl-2-pentene,  $b_{\text{ref}}$  66.9°,  $n_D^{20}$  1.4004,  $d_4^{20}$  0.6802:  
260(0), 359(17), 406(4), 413(4), 444(0), 472(110), 514(13),  
717(1), 740(10), 794(2), 818(21), 833(15), 875(0), 908(9),  
929(0), 956(3), 986(0), 1009(7), 1063(34), 1084(2), 1121(5),  
1149(4), 1167(4), 1203(3), 1263(8), 1305(19), 1353(10),  
1382(43), 1439(15), 1455(53), 1478(4), 1525(5), 1677(145),  
2727(10), 2850(80), 2876(100), 2889(40), 2913(160),  
2967(100), 2987(20), 3035(10).

G. M. Kozolapoff

3/2

RM

Stepin, Kh.E.

Hydrogenation of isopropenylcyclopropane in the presence of platinum black. B. A. Kazanskiy, M. Yu. Lisinga, A. I. Malyshev, V. T. Aleksanov, and Kh. E. Stepin. (V. D. Zhdanov Inst. Org. Chem. Acad. Sci. U.S.S.R., Moscow). Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk 1956, 1102-8; cf. C.A. 50, 13780g.---Hydrogenation of isopropenylcyclopropane (I) in EtOH over Pt black at room temp. and atm. pressure results in addn. of 1.3 moles H yielding 70% isopropylcyclopropane (II) and 30% 2-methylpentane. The 2nd product results from hydrogenation of the intermediate 2-methyl-1-pentene and 2-methyl-2-pentene; II in these circumstances is not attacked by H. The 2-methylpentene isomers do not isomerize mutually in contact with Pt black. The Raman spectrum of II is (cm.<sup>-1</sup>) 297(2), 290(9), 296(14), 339(17), 440(2), 465(30), 708(12), 737(15), 798(8), 818(10), 872(71), 904(18), 922(6), 951(8), 961(2), 991(9), 1014(2), 1041(7), 1065(1), 1066(7), 1123(15), 1135(12), 1161(9), 1174(2), 1193(9), 1209(11), 1216(15), 1284(30), 2753(5), 2876(150), 2912(67), 2940(30), 2959(9), 2990(50), 3004(140), 3035(80), and 3074(60). G. M. K.

*STERIN, Kh. Ye.*

USSR/ Chemistry - Hydrogenation

Card 1/1 Pub. 40 - 9/25

Authors : Kazanskiy, B. A.; Lukina, M. Yu.; Malyshev, A. I.; Aleksanyan, V. T.; and Sterin, Kh. Ye.

Title : ~~Hydrogenation of isopropenylcyclopropane~~ in the presence of Pd black

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 36-42, Jan 1956

Abstract : Experiments showed that the hydrogenation of isopropenylcyclopropane in an alcohol solution in the presence of Pd-black at room temperature and atmospheric pressure results in the addition of two hydrogen molecules to the propane and the formation of 2-methylpentane. It was found that the hydrogenation is followed by intermediate formation of 2-methylpenene-1 and 2-methylpentene-2. Isomerization of 2-methylpenetene-2 into 2-methylpentene-1 and vica versa was observed under conditions identical to those of hydrogenation. Continuous agitation with reduced Pd-black produced no effect on the isopropenylcyclopropane. Ten references: 5 Russ and USSR, 4 USA and 1 Germ. (1912-1954). Tables; graphs.

Institution : Acad. of Sc., USSR, Inst. of Organ. Chem. im. N. D. Zelinskiy

Submitted : February 15, 1955

KAZANSKIY, B.A.; LUKINA, MYu.; NAKHAPETYAN, L.A.; ALEKSANYAN, V.T.:  
STERIN, Kh.Ye.

Isomerisation of isopropenylcyclobutane over silica gel catalysts  
in the conditions of adsorption chromatographic analysis. Izv. AN  
SSSR, Otd.khim.nauk no.11:1421-1422 N '56. (MIRA 10:3)

1. Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR i Komissiya po spektroskopii pri Otdelenii fiziko-matematicheskikh nauk Akademii nauk SSSR.  
(Cyclobutane) (Chromatographic analysis)



STERIN KH.YE.

51-5-3/26

AUTHOR: Aleksanyan, v.T. and Sterin, Kh.Ye.

TITLE: The Intensities of Lines in Raman Spectra of Standard Substances. (Intensivnosti liniy v spektrakh kombinatsionnogo rasseyaniya veshchestv-etalonov)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol. 2, No.5, pp. 562 - 567 (USSR).

ABSTRACT: This paper reports accurate measurements of the Raman spectrum intensities of the standard substances: cyclohexane, methylcyclohexane, toluene and of other substances which can be used as standards: cyclopentane, benzene and carbon tetrachloride.

Experimental technique: Mercury lamps ПРК-2 were used and the Raman spectra excited with the 4358 Å line. The standard liquids were not thermostatted at room temperature. A spectrograph with a camera of  $f = 270$  mm was used. Two arrangements were employed giving 150 and 100  $\text{cm}^{-1}/\text{mm}$  linear dispersion (with 0.04 mm wide slit in both cases) Effects of variation of the source - lamp current and of the dispersion on the Raman spectra of cyclohexane are given in Table 1. Lowering of the lamp current from 2.9 A to 2.2 A affected the line intensities but an increase of the dispersion from 150 to 100  $\text{cm}^{-1}/\text{mm}$  had

Ca.

Card 1/3 no practical effect.

ALEKSANYAN, V.T.; STERNIN, Kh.Ye.

Raman spectra of bicyclo-2,2,1-heptane, bicyclo-2,2,1-hept-5-ene, bicyclo-2,2,1-hepta-2,5-diene and their homologous. Fiz. sbor. no.3:59-63 '57. (MIRA 11:8)

1. Komissiya po spektroskopii AN SSSR.  
(Norbornadiene--Spectra)  
(Bicycloheptene--Spectra)  
(Bicycloheptadiene--Spectra)

ALEKSANYAN, V.T.; STERIN, Kh.Ye.; LUKINA, M.Yu.; SAL'NIKOVA, L.G.; SAMPONOVA, I.L.

Raman spectra of various cyclopropane hydrocarbons and conjugation of three-member ring with double bonds. Fiz. sbor. no.3:64-68 '57.  
(MIRA 11:8)

1. Komissiya po spektroskopii AN SSSR i Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.  
(Cyclopropane—Spectra) (Raman effect)

ALEKSANYAN, V.T.; STERIN, Kh.Ye.; LUKINA, M.Yu.; NAKHAPETIAN, L.A.

Raman spectra of various monoalkylcyclobutanes and cyclobutyl  
bromide. Fiz. sbor. no.3:68-71 '57. (MIRA 11:8)

1. Komissiya po spektroskopii AN SSSR i Institut organicheskoy  
khimii im. N.D. Zelinskogo AN SSSR.  
(Cyclobutane--Spectra)

STERIN, N.Ye

AUTHOR GONIKSBERG N.G., ZHULIN V.M., ALEKSANYAN V.I., PA - 2917  
STERIN Kh.E.

TITLE The polymerization of 2,3-Dimethylbutene - 2, 2,3-Dimethyl-  
butene - 1 and 3,3-Dimethylbutene-1 at pressures up to 4.000  
atm. (Issledovaniye polimerizatsii 2,3-dimetilbutena-2, 2,3-  
dimetilbutena-1 i 3,3-dimetilbutena-1 pri davleniyakh do 4.000  
atmosfer - Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 1, pp 123 - 126  
(U.S.S.R.)

ABSTRACT Received: 6/1957 Reviewed: 7/1957  
In a previous paper it was shown that high pressure accelerates  
the polymerization of 2,3 dimethyl-butan-2 (henceforth refered  
as DMB) considerably. In the present paper the authors intended  
to study the cinetics of 2,3 DMB-2 and of related compounds at  
high pressure and to investigate the properties of the polymers.  
This reaction takes place gradually under a pressure of 3660-3680  
atm and at a temperature of 290-292°C and passes through a dimer  
state (which has its maximum yield after about 16 hrs). The dimer  
fraction is able to undergo further polymerization. The degree  
of polymerization after 32 hrs is still low (9,1-17,7%). Under  
the same conditions 2,3-DMB-1 and 3,3-DMB-1 are polymerzated

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PA - 2917  
The polymerization of 2,3-Dimethylbutene-2, 2,3-Dimethylbutene-1 and 3,3-Dimethylbutene-1 at pressures up to 4.000 atm.

two olefines, it appears that, in the case of the polymerization of the three hexames under consideration, as structural polymerization takes place. Without this process the formation of Cis-dalkylethylenes could not be expected. They predominate, however, in the dimer fraction. Moreover, the formation of monoalkylethylenes would not be imaginable without the assumption that in the case of the polymerization of 2,3 DMB-2 it is not the molecules or the radicals of the monomers that are subject to a structural isomerozation, but dimer molecules or the radicals  $C_{12}H_{23}$ . Results show that the reaction of thermal

CARD 3/3

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE:

polymerization accelerated by pressure is slowest in the case of 4-substituted ethylenes. This is apparently due to the important spatial difficulties under consideration. (With 3 tables and 5 citations from other publications.)  
Institute for Organic Chemistry "N.D. Zelinskiy" and the Commission for Spectroscopy of the Academy of Sciences of the USSR.  
B.A. KAZANSKIY.  
21.9. 1956.  
Library of Congress.

SOV/62-58-8-11/22

AUTHORS: Gavrilova, A. Ye., Gonikberg, M. G., Aleksanyan, V. T.,  
Sterin, Kh. Ye.

TITLE: The Investigation of the Homogeneous Destructive Tetralin  
Hydration at High Hydrogen Pressure (Issledovaniye gomogenogo  
destruktivnogo gidrirovaniya tetralina pri vysokikh davleniyakh  
vodoroda)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk,  
1958, Nr 8, pp. 981-989 (USSR)

ABSTRACT: The present paper is the continuation of a number of preliminary  
papers on the homogeneous destructive hydration of aromatic  
hydrocarbons at high hydrogen pressure. Among the various papers  
by other authors Darwent (Darwent, Ref 5) must be mentioned  
especially; he assumed that the compound of atomic alkyl benzene  
with the simultaneous formation of the unstable free radical  
is based on the last of several reactions. This radical then  
decomposes at the binding  $C_{arom} - C_{aliph}$ . After further ex-  
planations of this process the authors mention that the break  
of the C - C bond in the binding of the hydrogen atom with the

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SOV/62-58-8-11/22

The Investigation of the Homogeneous Destructive Tetralin Hydration at High Hydrogen Pressure

carbon atom of the ring is to be assumed as probable. With respect to the break of the C - C bond and the processes connected with it it was of special interest to the authors to investigate the homogeneous destructive tetralin hydration. This hydration took place at 440-462°C and at up to 1200 atmospheres of absolute pressure. Based on the investigation of the reaction products by means of rectification methods and the taking of combination-dispersion spectra of light (as well as by means of kinetic data) the authors suggested a general scheme of the tetralin reactions on the conditions mentioned. The data obtained agree with the assumptions mentioned in the present paper with respect to the radical and chain mechanism of the homogeneous destructive hydration of aromatic hydrocarbons. There are 1 figure, 4 tables, and 17 references, 8 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo. Komissiya po spektroskopii pri OFMN Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR; Committee of Spectroscopy OFMN, AS USSR)

Card 2/3



SOV/62-58-8-11/22  
The Investigation of the Homogeneous Destructive Tetralin Hydration at  
High Hydrogen Pressure

SUBMITTED: January 25, 1957

Card 3/3

STERIN, Kh.Ye.

Study of shape and breadth of Roman spectrum lines. Trudy Fiz.  
inst. 9:13-58 '58. (MIRA 11:11)  
(Raman effect)

AUTHORS: Kasanskiy, B. A., Lukina, M. Yu., SOV/62-99-10-24/25  
Safonova, I. L., Aleksanyan, V. T., Sterin, Zh. Ye.

TITLE: Letter to the Editor (Pis'ma redaktoru)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1959, Nr 10, pp 1280 - 1280 (USSR)

ABSTRACT: The authors succeeded for the first time to distribute  
1,2-diphenyl cyclopropane and 1-phenyl-2-cyclopropyl  
cyclopropane to stereoisomers. The properties were:  
1,2-diphenyl cyclopropane (cis-form); boiling point 131,  
6-131, 7°, (4,8mm); melting point 36,7°;  $n_D^{20}$  1,5087;  
 $d_4^{20}$  1,0290. The trans-form: Boiling point 144,1-144,2°  
(5,2 mm); melting point 15,3°;  $n_D^{20}$  1,5097;  $d_4^{20}$  1,0346;  
1-phenyl-2-cyclopropyl cyclopropane: cis-form:boiling  
point 100,2-100,5 (11 mm);  $n_D^{20}$  1,5330;  $d_4^{20}$  0,9574; trans-  
form: Boiling point 111,3-111,5° (13,8 mm);  $n_D^{20}$  1,5371;  
 $d_4^{20}$  0,9585. The spectra of the combination dispersion

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Letter to the Editor

SOV/62-58-10-24/25

of both stereoisomer pairs were investigated and a considerable increase of the integral intensities of the characteristic bands of the benzene ring were found. This effect proves the presence of a considerable linkage of the phenyl nuclei with the  $\beta$ -membered nucleus. This linkage is less intense in the spectra of the isomers with low boiling point. The authors explain this phenomenon by the presence of steric hinderances that disturb the situation favorable to the phenyl nuclei. There are 2 references, which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im.N.D.Zelinskogo Akademii nauk SSSR i Komissiya po spektroskopii pri Otdelenii fiziko-matematicheskikh nauk Akademii nauk SSSR (Institute of Organic Chemistry imeni N.D.Zelinskiy AS USSR and the Commission for Spectroscopy at the Department of Physical Mathematical Sciences AS USSR)

SUBMITTED: July 19, 1958  
Card 2/2

AUTHORS: Aleksanyan, V. T., ~~Sterin, Kh. Ye.~~, SOV/48-22-9-16/40  
Mel'nikov, A. A., Plate, A F.

TITLE: Raman Spectra of Some Unsaturated Cyclic Hydrocarbons  
(Spektry kombinatsionnogo rasseyaniya nekotorykh nepredel'nykh tsiklicheskikh uglevodorodov)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958,  
Vol 22, Nr 9, pp 1073 - 1078 (USSR)

ABSTRACT: This paper is a report on the investigation of the Raman spectra of hydrocarbons with a double bond in the nucleus: 1-ethyl cyclopentene, 1-n-propyl cyclopentene-1, and 1-n-butyl cyclopentene (1. series), also of such compounds with a semicyclic double binding: ethylidene cyclopentane, n-propylidene cyclopentane and n-butylidene cyclopentane (2. series). It was also attempted to determine the correlation between the characteristic frequency of the C = C binding and the structural features of the olefines. The method which was used in the recording and in the measurement of the spectra were described already earlier (Refs 8,9). The spectra

Card 1/2

Raman Spectra of Some Unsaturated Cyclic Hydrocarbons SOV/48-22-9-16/40

of the hydrocarbons of the first mentioned series are known already from pertinent publications (Refs 13,14). The spectra of cyclopentene and of 1-methyl cyclopentene-1 (Refs 7,14)(1.series) and of methyl cyclopentene (Ref 14) (2.series) represent a substantial supplement to existing information. The characteristic frequencies in the spectra of both series are given in tables 1 and 2. The qualitative considerations given in this respect are without doubt only of a preliminary nature and necessitate a comparison with further experimental and theoretical evidence. There are 3 tables and 24 references, 14 of which are Soviet.

ASSOCIATION: Laboratoriya Komissii po spektroskopii Akademii nauk SSSR  
(Laboratory of the Committee of Spectroscopy, AS USSR)  
Kafedra khimii nefi Moskovskogo gos. universiteta imeni  
M.V.Lomonosova (Chair of Petroleum Chemistry at the Moscow  
State University imeni M.V.Lomonosov)

Card 2/2

STERN, K. T.

21(0), 24(0) PHASE I BOOK EXPLOITATION SCV, 3

Academy of Sciences USSR, Physics Institute

Issledovaniya po eksperimental'noy i teoreticheskoj fizike: (Sbornik) (Studies on Experimental and Theoretical Physics: Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 304 p. Errata slip inserted. 2,300 copies printed.

Ed.: I. L. Fabelinskii, Doctor of Physical and Mathematical Sciences; Eds. of Publishing House: A. L. Bernik and V. G. Berezhnii. In Memory of Grigoriy Samuilovich Ginzburg (1901-1958). (Chapman) in Doctor of Physical and Mathematical Sciences. I. L. Fabelinskii, Doctor of Physical and Mathematical Sciences. I. L. Fabelinskii, Doctor of Physical and Mathematical Sciences. P. S. Landsberg-Baryanskaya, Candidate of Physical and Mathematical Sciences; and G. P. Motulevich (Secretary), Candidate of Physical and Mathematical Sciences.

PURPOSE: This book is intended for physicists and researchers engaged in the study of electromagnetic radiations and their role in investigating the structure and composition of materials.

COVERAGE: The collection contains 30 articles which review investigations in spectroscopy, optics, molecular optics, semiconductor physics, nuclear physics, and other branches of physics. The introductory chapter gives a biographical profile of G. S. Landsberg, Professor and Head of the Department of Optics of the Division of Physical Technology, Russian Academy of Sciences, and reviews his work in the field of laser light, gases, spectroscopy, and other topics. The personal notes are mentioned. References accompany each article.

Bazulin, P. A., V. I. Malynov, and M. M. Shchepin. The work of G. S. Landsberg in the field of Molecular Spectroscopy. 27  
Abramson, I. S., and A. M. Mogilarski. Investigation of Transformation Processes in an Activated Discharge Generator Operating Under Conditions of Low Arc Currents. 27

Aleksandrov, V. F., Kh. Ye. Starin, A. L. Kiberman, I. M. Kurnet, and M. I. Trunova. On the Possibility of Establishing the Configuration of the Outer Shells of Cyclohexane on the Basis of a Combined Scattering Spectrum. 43

Andreyev, N. M. Standing Sound Waves of Large Amplitude. 53

Bazulin, P. A., and A. I. Sokolovskaya. Investigation of the Relation of the Width of Combined Scattering Lines to Temperature. 56

Budyaga, P. A., and V. A. Zakharenko. A Medium With Negative Absorption Coefficient. 62

Vladimirov, V. V. Nuclear Transitions in Nonperiodical Nuclear Systems. 71

Volkman, N. Y. Optical Properties of Substances in the Vitreous State. 80

Vul'fson, I. S. New Methods of Increasing the Effectiveness of Radiation Thermocouples. 95

Ginzburg, V. L., and A. P. Levanyuk. Scattering of Light Near Points of Phase Transition of the Second Type and the Critical Curie Point. 100

Iakovlev, M. A. Irradiation of an Elastic Wall Vibrating Under the Action of Statistically Distributed Forces. 104

Levin, L. R. The Damping of Light by a Cloud. 117

Masing, M. A., S. L. Mandelstam, and V. G. Kolesnikov. The Broadening and Shifting of the Spectral Lines of a Gas Discharge in Plasma. 121

Malyshov, V. I., and V. M. Murzin. Investigation of the Hydrogen Bond in Substances Whose Molecules Contain Two Hydroxyl Groups. 128

130

STERIN, Kh. Ye

LANDSBERG, Grigoriy Samuilovich, akademik [deceased]; KAZANSKIY, Boris Aleksandrovich, akademik; BAZHULIN, P.A., doktor fiziko-matemat. nauk; BULANOVA, T.F.; LIBERMAN, A.L., MIKHAYLOVA, Ye.A.; PLATE, A.F.; ~~STERIN, Kh. Ye~~ SUSHCHINSKIY, M.M.; TARASOVA, G.A.; UKHOLIN, S.A.; BRUSOV, I.I., red.izd-va; KASHINA, P.S., tekhn.red.

[Determination of the individual hydrocarbon composition of straight-run gasolines by the combined method] Opreделение individual'nogo uglevodorodnogo sostava benzinov priamoi gonki kombinirovannym metodom. Moskva, Izd-vo Akad.nauk SSSR, 1959. 362 p. (MIRA 12:8)

(Gasoline)



GONIKBERG, M.G.; STERIN, Kh.Ye.; UKHOLIN, S.A.; OPEKUNOV, A.A.; ALEKSANYAN,  
V.T.

Producing Raman spectra at high pressures. Opt. i spektr. 6 no.1:109-110  
Ja '59. (MIRA 12:3)

(Raman effect)

STERIN, Kh. Yz.

5 (3)

AUTHORS:

Kuznetsov, B. A., Litman, A. L.,  
Losh, G. P., Kuznetsov, I. K.,  
Alshayev, V. S., Sterin, Kh. Yz.

TITLE:

Catalytic Cyclization of n-Octane with Formation of the Homo-  
logs of the Cyclopentane (Kataliticheskaya tsiklizatsiya n-  
oktana s obrazovaniya gomoalogov tsiklopentana)

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdel'nye khimicheskiye nauki,  
1959, No 6, pp 1071 - 1076 (USSR)

ABSTRACT:

By the action of a platinum catalyst n-octane forms the cyclic  
compounds: 1-methyl-2-ethylcyclopentane and n-propyl-  
cyclopentane in the residue. The cis-form of the first men-  
tioned compound could not be discovered. Apart from the com-  
pounds mentioned, there were still small quantities of 4-se-  
ptylthiane to be observed. Furthermore, a line ( $762\text{ cm}^{-1}$ ) was  
discovered, which was assigned to the pentamethylene bicyclo-  
[3,3,0]octane. This could, however, not yet be proved owing to the  
difficulties that arise in the production of the pentamethylene  
since the Raman spectra of the two cyclic compounds obtained  
are not hardly known, the single compounds compounds obtained  
pure and plotted separately. The synthesis was carried out  
according to a method which was worked out in the Institute  
mentioned in the Association, with the only difference that in-  
stead of aluminum oxide, silica gel was used for isomerization.  
In the experiments, part of the production of the different sub-  
stances is described in detail. The properties of and the yield  
in catalyzates, obtained from n-octane, are compiled in Table  
1. Table 2 gives the data concerning the substances produced  
by distillation. When analyzing the catalyzates, distillates,

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ethylcyclopentane in the lower boiling fraction, and n-propyl-  
cyclopentane in the residue. The cis-form of the first men-  
tioned compound could not be discovered. Apart from the com-  
pounds mentioned, there were still small quantities of 4-se-  
ptylthiane to be observed. Furthermore, a line ( $762\text{ cm}^{-1}$ ) was  
discovered, which was assigned to the pentamethylene bicyclo-  
[3,3,0]octane. This could, however, not yet be proved owing to the  
difficulties that arise in the production of the pentamethylene  
since the Raman spectra of the two cyclic compounds obtained  
are not hardly known, the single compounds compounds obtained  
pure and plotted separately. The synthesis was carried out  
according to a method which was worked out in the Institute  
mentioned in the Association, with the only difference that in-  
stead of aluminum oxide, silica gel was used for isomerization.  
In the experiments, part of the production of the different sub-  
stances is described in detail. The properties of and the yield  
in catalyzates, obtained from n-octane, are compiled in Table  
1. Table 2 gives the data concerning the substances produced  
by distillation. When analyzing the catalyzates, distillates,

Card 2/3

and residues from n-octane it is shown that about the same per-  
centages are obtained for both compounds. There are 2 tables and  
12 references, 10 of which are Soviet.

ASSOCIATION:

Institut organicheskoy khimii im. N. D. Zelinskogo Akademii  
nauk SSSR i Khimicheskoy po spetsializatsii Akademii nauk SSSR  
(Institute of Organic Chemistry im. N. D. Zelinskogo of the  
Academy of Sciences, USSR, and Committee for Spectroscopy of  
the Academy of Sciences, USSR)

SUBMITTED:

August 15, 1957

Card 3/3

AUTHORS: Gonikberg, M.G. Starin, Kh.Ye., Ukholin, S.A., Gubanov, A.A. and  
Aleksanyan, V.T. SOV/51-6-1-21/30

TITLE: Production of the Raman Scattering Spectra at High Pressures  
(Polucheniye spektrov kombinatsionnogo rassseyaniya pri vysokikh  
davleniyakh)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 1, pp 109-110 (USSR)

ABSTRACT: To obtain the Raman spectra at pressures up to  $2500 \text{ kg/cm}^2$  the authors used apparatus shown in a figure on p 110. A scattering cell consisted of two steel cylinders one on top of the other. The external diameter of the outer cylinder was 160 mm and the diameter of the cell proper was 20 mm. The substance placed in the cell was illuminated through three windows which were at right angles to the cell. These windows are marked 2 in the figure. A fourth window (marked 3) was used to observe the scattered light. Construction of the windows follow Bridgeman's technique described in Ref 5. The smallest diameter of the conical apertures at each window was 7 mm; the angle  $\varphi$  was  $45^\circ$ . The Raman spectra were excited with the blue line of mercury,  $\lambda = 4538 \text{ \AA}$ , produced by a FRK-type lamp. Three diaphragms (marked 5 in the figure) were used to cut out the light reflected by the internal walls of the

Card 1/2

Production of the Raman Scattering Spectra at High Pressures

SOV/51-6-1-21/30

cell. A spectrograph ISF-51 was used to obtain the Raman spectra of toluene and isopropylbenzene at pressures of 1000 and 2000 kg/cm<sup>2</sup> at room temperature. The photographic plates were exposed for 4-6 hours. No displacement of the Raman frequencies of toluene and isopropylbenzene was observed at these two pressures. The apparatus described may be used also to obtain the Raman spectra of compressed gases. There are 1 figure and 5 references, 4 of which are English and 1 translation of an English work into Russian.

SUBMITTED: July 7, 1963

Card 2/2

SOV/51-7-2-5/34

AUTHORS: Aleksanyan, V.T., Sterin, Kh.Ye., Lukina, M.Yu., Safonova, I.L. and Kazanskiy, B.A.

TITLE: A Spectroscopic Investigation of the Effect of Mutual Orientation of Cyclopropane and Phenyl Rings on their Conjugation (Spektroskopicheskoye issledovaniye vliyaniya vzaimnoy orientatsii tsiklopropanovykh i fenil'nykh kolets na ikh sopryazheniye)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 2, pp 178-186 (USSR)

ABSTRACT: The paper describes results of the study of Raman spectra of stereoisomers of 1,2-diphenylcyclopropane and 1-phenyl-2-cyclopropylcyclopropane. These hydrocarbons were prepared following the technique described by Kishner (Ref 4) and Smith and Rogier (Ref 16). Stereoisomers were separated out by fractional distillation under vacuo. The Raman spectra were recorded by means of a spectrograph ISP-51. The frequencies and intensities were measured following a technique described earlier (Ref 17). The frequency scatter did not exceed  $\pm 1$  cm<sup>-1</sup> and the intensity scatter was  $\pm 10\%$ . The integral intensities were determined by direct microphotometry of the line shape. The 802 cm<sup>-1</sup> line in the spectrum of cyclohexane was used as a standard and its molar integral intensity was taken to be 500. The

Card 1/3

SOV/51-7-2-8/34

A Spectroscopic Investigation of the Effect of Mutual Orientation of Cyclopropane and Phenyl Rings on Their Conjugation

results obtained are tabulated on pp 180-1. The intensities of the lines at  $\sim 1200$  and  $\sim 1600$   $\text{cm}^{-1}$  of the two compounds studied were stronger than those of alkyl benzenes; this indicates a strong conjugation of cyclopropane and phenyl rings. The conjugation is shown less clearly in the spectra of stereoisomers with lower boiling points. This is due to steric obstacles which prevent the most favourable arrangement of the phenyl rings with respect to the cyclopropane ring. Such steric obstacles exist only in cis-isomers. This circumstance was used to identify the cis- and trans-isomers of both hydrocarbons. For 1,2-diphenylcyclopropane the isomer with a boiling point of  $131.6-131.7^\circ\text{C}$  (4.8 mm Hg) and a freezing point of  $36.7^\circ\text{C}$  was identified as the cis-form, while the isomer with a boiling point of  $144.1-144.2^\circ\text{C}$  (5.2 mm Hg) and a freezing point of  $15.3^\circ\text{C}$  had the trans-form. The cis-isomer of 1-phenyl-2-cyclopropylcyclopropane had a boiling point of  $100.2-100.5^\circ\text{C}$  (at 11 mm Hg) and the trans-isomer

Card 2/3

A Spectroscopic Investigation of the Effect of Mutual Orientation of Cyclopropane  
and Phenyl Rings on Their Conjugation

SOV/51-7-2-6/34

boiled at 111.3-111.5°C (at 13.8 mm Hg). There are 2 figures, 2 tables  
and 21 references, 9 of which are Soviet, 8 English, 1 French, 1 German,  
1 translation from English into Russian and 1 from an international  
journal.

SUBMITTED: September 23, 1958

Card 3/3

STERING, Kh. Ye.

5. (4)  
AUTHORS:

Krasnitsky, B. A., Landsberg, S.S. (Dobruya), SV/62-59-9-15/10  
Alshansky, V. F., Zhukovskiy, L. A.,  
Liberman, A. L., Miluykova, Ye. A., Plat, A. F., Sterin, Kh.Ye.,  
Sholin, S. A.

TITLE:

Investigation of the Composition of the Fraction With a Boiling  
Point Between 150 and 250° of the Baku Crude Petroleum

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdel'mnye khimicheskikh nauk,  
1959, Br 9, pp 1612 - 1622 (USSR)

ABSTRACT:

An attempt is being made to apply the combined investigation  
method for benzene (Ref 1) to the investigation of the petro-  
um fraction with a boiling point between 150 and 250° of the  
Baku crude petroleum. The petroleum investigated came from the  
Kochubey deposit. It was proved that this fraction contains  
12-13% of aromatic and 13-15% of heavyaromatic hydrocarbons.  
In the quantitative distillation of the aromatic hydrocarbons  
found, the quantitative distillation in groups of aromatic hydro-  
carbons boiling in this range was carried out with characteris-  
tic of the arrangement of the side-chains on the benzene ring  
or the corresponding cyclohexane ring and that for the multi-  
cyclic according to the arrangement of the rings. By this method

Card 1/3

the authors succeeded in establishing the composition of the  
aromatic compounds up to 70% and that of the hydroaromatic com-  
pounds up to 40%. In the paraffin-naphthene part of the fraction  
the presence of naphthene with two different substituents in the  
same carbon atom and the cyclohexane could be established (mixed  
substitution). The investigation into narrower fractions was possible  
at the paraffin-naphthene by the method of the specific gravi-  
ties, the refractive index and the boiling point of these frac-  
tions. In figures 1 and 2 the paraffin-naphthene fractions are  
identified and tables 1-6 contain the results of the analysis.  
Table 7 gives the results of the distillation of the paraffin-  
cyclopentane fraction of the ligroin applying the coefficient  
proposed by P. S. Maslov (Ref 1). There are 2 figures, 7 tables,  
and 11 references, 10 of which are Soviet.

Card 2/3

ASSOCIATION:

Institut organicheskoy khimii im. V. D. Zilinskogo Akademi-  
i nauk SSSR (Institute of Organic Chemistry, Lenin St. 3, Melnikova  
of the Academy of Sciences, USSR), Krasnaya St. 1, Spetsialnii  
Akademi i nauk SSSR (Committee of Spectroscopy of the Academy  
of Sciences, USSR)

SUBMITTED:

January 4, 1956

Card 3/3



24(7), 11(4)

SOV/48-23-10-2/39

AUTHORS:

Aleksanyan, V. T., Sterin, Kh. Ye., Ukholin, S. A.

TITLE:

The Analysis of Hydrocarbon Mixtures According to the Raman Spectra of Light

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1177-1178 (USSR)

ABSTRACT:

Raman spectra are frequently used in the authors' laboratories for the purpose of analyzing natural hydrocarbon mixtures, especially gasoline fractions. The analytical investigations forming the subject of the present paper were carried out in close cooperation of the laboratory of the Komissiya po spektroskopii (Spectroscopy Commission) and the Laboratoriya kataliticheskogo sinteza Instituta organicheskoy khimii AN SSSR (Laboratory for Catalytic Synthesis of the Institute of Organic Chemistry of the AS USSR). The first part of this paper gives a short report on the catalytic cyclization of n-octane with formation of homologs of cyclopentane. In low-boiling fractions trans-1-methyl-2-ethyl cyclopentane (~1.4%) and in later fractions n-propyl cyclopentane (also ~1.4%) was found. Also 4-methyl heptane was found. In the spectrum of the distillation residue the line  $762\text{ cm}^{-1}$  was found, which may be attributed to pentalane (which might have been

Card 1/2

The Analysis of Hydrocarbon Mixtures According to the Raman Spectra of Light SOV/48-23-10-2/39

produced by the second cyclization of n-propyl cyclopentane or 1-methyl-2-ethyl cyclopentane). The second part of the paper gives some details concerning the homogeneous destructive hydrogenation of tetralin at high hydrogen pressures. At pressures of up to 1200 atm and temperatures of 440-462° the hydrogenation was carried out. In the reaction products (with the boiling point of 136.1 - 183.9°) the following hydrocarbons were found: Ethyl benzene - 16%, isopropyl benzene - 9%, n-propyl benzene - 10%, secondary butyl benzene - 12%, n-butyl benzene - 43%, indan - 4%,  $\alpha$ -methyl indan - 2-4%, as well as others the content of which amounts to less than 1%. In higher boiling fractions (185 - 190°)  $\alpha$ -methyl indan was the main component, and further n-butyl benzene,  $\beta$ -methyl indan (5 - 10%) and trans-decalin (1 - 3%) was found. The scheme of hydrogenation and of the isomerization of tetralin is given. There are 1 figure and 3 Soviet references.

Card 2/2

11-4700

73000  
007/62-60-1-15/37

AUTHORS: Alekanyan, V. T., Sterin, Kh. Ye., Liberman, A. L.,  
Lukina, M. Yu., Tayts, G. S., Tarasova, G. A., Terent'eva,  
Ye. M.

TITLE: Investigation of Hydrocarbons by Optical Method. XII.  
Raman Spectra of Some Hydrocarbons of Various Series

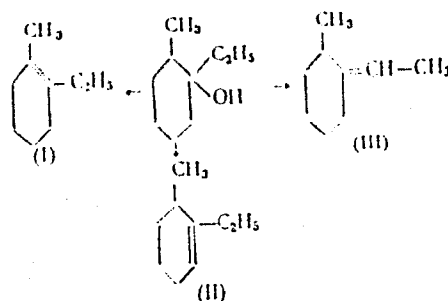
PERIODICAL: Investiya Akademii nauk SSSR. Otdeleniye khimicheskikh  
nauk, 1960, No 1, pp 84-89 (USSR)

ABSTRACT: The Raman spectra of the following hydrocarbons were  
studied: n-dodecane; 5,5-dimethylundecane; 1,1,2-tri-  
methyleyclopropane; sec-butyleyclopentane, 2-cyclopentyl-  
octane, n-propyleyclohexane, 1-methyl-2-ethylcyclo-  
hex-1-ene. Combination of the chemical and spectro-  
scopic data confirm that 1,2-dialkyleyclohexan-1-ol  
on dehydration yields 1,2-dialkyleyclohexenes with  
double bond predominantly in position (I).

Card 1/3

Investigation of Hydrocarbons by  
Optical Method. XII

7006,  
SOV/62-60-1-15/37



There are 20 references, 16 Soviet, 6 U.S., 4 German.  
The 5 most recent U.S. references are: Mosher,  
W. A., J. Am. Chem. Soc., 62, 552 (1940); Fenske, M. R.,  
Anal. Chem., 19, 700 (1947); Signalgo, F. K., Cramer,  
P. L., J. Am. Chem. Soc., 55, 3526 (1933); Foehr,  
F. G., Fenske, M. R., Industr. and Engng. Chem., 41,  
1946 (1949); Kelso, R. G., Greenlee, K. W., Derfer,  
J. M., Boord, C. E., J. Am. Chem. Soc., 74, 287 (1952).

Card 2/5

Investigation of Hydrocarbons by  
Optical Method. XII

78069  
SOV/62-60-1-15/37

ASSOCIATION: N. D. Zelinskiy Institute of Organic Chemistry of the  
Academy of Sciences of the USSR (Institut organicheskoy  
khimii imeni N. D. Zelinskogo Akademii nauk SSSR)

SUBMITTED: May 30, 1958

Card 3/3

5 3100

60437

SUNSPOT/60437/03/036/0316

120/1137

ATTENTION: Alexander, T. S., Sterling, E. W., McMillan, A. L. and Pate, A. V.

FROM: Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, U. S. Department of Agriculture

SUBJECT: Raman Spectra of 1,2-dialkylcyclohexane Stereoisomers

REFERENCE: Optica 1 Spectroscopica, 1960, Vol. 6, No. 3, pp 32-37 (USSR)

ABSTRACT: The authors investigated the Raman spectra of stereoisomers of three 1,2-dialkylcyclohexane compounds: 1-ethyl-2-propylcyclohexane (I), 1-ethyl-2-butylcyclohexane (II), and 1-ethyl-2-pentylcyclohexane (III). The methylcyclohexane (I) was a pure substance, while the others were admixtures. The Raman spectra had certain features which could be used to identify reliably the type of the stereoisomer. The features were lines in the regions 1111-1177 cm<sup>-1</sup> and 885-910 cm<sup>-1</sup> in the spectra of the isomers with lower boiling points, and lines in the regions 1107-1130, 1144-1160 and 842-870 cm<sup>-1</sup> in the spectra of the isomers with higher boiling points. The isomers with the highest boiling points (72.9, 91.0 and 122.6 °C for I, II and III respectively) had cis-structure. There are 1 table and 6 Soviet references.

Card

11/2

Ca=4  
2/2

RECEIVED: MAY 14, 1959

5(5)

S/020/60/130/03/019/065  
B011/B016

AUTHORS: Kazanskiy, B. A., Academician, Nakhapetyan, L. A., Aleksanyan,  
V. T., Sterin, Kh. Ye., Podkhalyuzin, A. T.

TITLE: Dehydration<sup>1</sup> of Dimethyl-cyclopentyl-carbinol<sup>1</sup> in the Presence of  
Sulfuric Acid

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 3, pp 552-555  
(USSR)

ABSTRACT: The authors carried out the reaction mentioned in the title  
with 0.1% concentrated  $H_2SO_4$ , in order to clarify in what way  
a five-membered ring acts on the course of the reaction. The  
reaction conditions were the same as in one of their previous  
papers (Ref 1). The authors also this time obtained a mixture  
of unsaturated hydrocarbons, from which the following individual  
hydrocarbons were separated by distillation: isopropyl-cyclo-  
pentene-1, isopropenyl-cyclopentane (produced for the first  
time), and isopropylidene-cyclopentane. Herefrom the authors  
conclude that the reaction had proceeded according to the  
scheme (cf Fig). The structure of the separated compounds was

Card 1/3

Dehydration of Dimethyl-cyclopentyl-carbinol in  
the Presence of Sulfuric Acid

S/020/60/130/03/019/065  
B011/B016

confirmed by the agreement of the constants of two of them with data available in publications. The Raman spectra offered further proof of their structure. While the present investigation was being carried out, a paper by G. Chiurdoglu and S. Van Walle (Ref 4) was published, who investigated the dehydration of cyclic carbinols by distillation with 0.01%  $H_2SO_4$ .

The authors carried out the reaction mentioned in the title also under these conditions. By means of the Raman spectra of the dehydration products they found that with 0.01%  $H_2SO_4$  also a mixture of isopropyl-cyclopentene-1, isopropenyl-, and isopropylidene-cyclopentane results. The quantitative ratio of these components, however, varies according to the quantity of  $H_2SO_4$ . With increasing quantity the content of isopropenyl-cyclopentane decreases from 68-63% to 40-35%. At the same time, the quantity of the other two hydrocarbons increases. Also the yield of dehydration products increases from 66% to 91%. Thus, the results obtained by the authors are not in agreement with those of reference 4. The authors point out that the constants

Card 2/3



Dehydration of Dimethyl-cyclopentyl-carbinol in  
the Presence of Sulfuric Acid

S/020/60/130/03/019/065  
B011/B016

of isopropenyl-cyclobutane and isopropenyl-cyclopentane of  
reference 4 deviate considerably from those obtained by them-  
selves. They assume that in reference 4 no individual hydro-  
carbons, but mixtures of unsaturated hydrocarbons with a dif-  
ferent position of the double bond were under consideration.  
There are 1 figure, 1 table, and 5 references, 4 of which are  
Soviet. ✓

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: November 13, 1959

Card 3/3

S/020/60/131/06/40/071  
B004/B007AUTHORS: Aleksanyan, V. T., Sterin, Kh. Ye.TITLE: Orientation of the  $\pi$ -Electron Cloud<sup>1</sup> in the Cyclopropane<sup>1</sup> Ring

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 131, No. 6, pp. 1373 - 1375

TEXT: The authors investigated the conjugation of  $\pi$ -bonds on 1,2-diphenyl- and 1-phenyl-2-cyclopropyl-cyclopropane by means of the Raman spectrum (Refs. 1,2). The question remained unanswered as to whether the cis-form had the configuration A or B (Fig. 1). This has now been clarified by investigating the Raman spectrum of 1,1-diphenyl-cyclopropane. In this compound only configuration A is possible for stereochemical reasons. This is proved by comparing the intensity of the  $1600\text{ cm}^{-1}$  line of the Raman spectra (Table 1) of various phenyl-cyclopropanes. The relatively low conjugation between cyclopropane- and phenyl ring in this compound is confirmed also chemically. Among all diphenyl-cyclopropanes investigated, 1,1-diphenyl-cyclopropane has the lowest hydrogenation rate under cleavage of the three-membered ring. The 1,1-diphenyl-cyclopropane spectrum has the intensive line of valence oscillations of C-H-bonds at  $3005\text{ cm}^{-1}$ , which is characteristic

Card 1/2

Orientation of the  $\pi$ -Electron Cloud in the Cyclopropane Ring S/020/60/131/06/40/071  
B004/B007

of the cyclopropane ring. There are 1 figure, 1 table, and 8 references, 4 of which are Soviet.

ASSOCIATION: Komissiya po spektroskopii pri Otdelenii fiziko-matematicheskikh nauk Akademii nauk SSSR (Commission on Spectroscopy at the Department of Physical and Mathematical Sciences of the Academy of Sciences, USSR)

PRESENTED: January 4, 1960, by B. A. Kazanskiy, Academician

SUBMITTED: December 25, 1959

Card 2/2

KAZANSKIY, B.A., akademik; LIBERMAN, A.L.; KUZNETSOVA, I.M.;  
ALEKSANYAN, V.T.; STERIN, Kh.Ye.; LOZA, G.V.

C<sub>5</sub>-Dehydrocyclization of alkyl cyclopentanes into bicyclic hydrocarbons. Dokl.AN SSSR 133 no.2:364-366 J1 '60.  
(MIRA 13:7)

1. Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk SSSR i Komissiya po spektroskopii Akademii nauk SSSR.  
(Cyclopentane) (Cyclization)

0267

53300 only 1205, 1285

8/20/60/13/005/012/014, 12  
5016/8060

AUTHORS: Kuznetsov, B. A., Academician, Moscow, E. A., Khramov, S. I.,  
Bryazov, V. V., and Starik, G. V.

TITLE: Contact Conversions of Cyclooctane in the Presence of  
Platinized Coal

PERIODICAL: Doklady Akademii Nauk SSSR, 1960, Vol. 135, No. 5,  
pp. 1090 - 1093

TEXT: The authors wanted to find out the behavior of polymethylene of  
average ring size on platinized coal at lower temperatures than those  
applied by V. Prelog (Ref. 1). Moreover, they wanted to repeat the in-  
complete work of B. D. Zelinsky and G. I. Freyma (Ref. 2). According to  
the latest notions, cyclooctane can principally exist in two most stable  
forms:



Card 1/3

The amount of (II) in cyclooctane is probably very small. In the centre-  
symmetric form (I), the four equatorial hydrogen atoms are placed higher  
than the central ring plane, whereas other four of them are placed below  
this plane. When any pair of these atoms in 1,5-position separates, the  
transannular C-C bond may form and cis-bicyclo-(2,2,2)-octane-(cis-penta-  
lene) may result. In this work, the authors examined the conversions of  
cyclooctane on platinized coal at 310° in the presence and in the absence  
of hydrogen. A quantitative conversion of cyclooctane took place in both  
cases. In the absence of hydrogen, cis-bicyclo-(2,2,2)-octane-(cis-penta-  
lene) developed in an amount of about 51% with the catalyst. Appreciable  
amounts were also obtained of trans-1-methyl-2-ethyl cyclooctane (about  
23%), trans-1-methyl-2-propyl cyclooctane (about 10%), and trans-1-methyl-2-  
(about 6%) of methyl heptane. Heating on the reaction products, the  
substance set up a scheme of this reaction. Apparently, the first stage is  
the formation of cis-pentane which then undergoes hydrodechlorination under  
the action of H<sub>2</sub> resulting hydrogen. Trans-1-methyl-2-ethyl cyclooctane  
and n-propyl cyclooctane thus result. 4-methyl-1-octene is formed by the  
hydrogenolysis of the latter. The same substances were formed in the  
presence of hydrogen, but the quantitative proportion was different. This

Card 2/3

is explained by a more intense hydrogenolysis of the five-membered ring in  
the presence of hydrogen. At the same time, the hydrogenolysis of pentane  
and n-propyl cyclooctane takes place more smoothly than that of 1-methyl-  
2-ethyl cyclooctane. The authors were not able to detect methyl cyclooctane  
in the reaction products (as conversely stated in Ref. 3). About 1-2%  
of aromatic hydrocarbons were obtained: toluene, ethyl benzene, and o-xyl-  
lenes. Tables 1 and 2 collect the results of distillation, the individual  
fractions together with their constants, and the quantitative proportions  
of the resulting substances. They were determined from the mass spectra  
(monograph by G. S. Landsberg, B. A. Kuznetsov, and others, Ref. 4) of the  
fractions. A paper by A. K. Liberman and others (Ref. 5) is mentioned.  
There are 4 tables and 11 references: 5 Soviet, 3 US, 1 Swiss, and 1 French.

ASSOCIATION: Moscow State University, Faculty of Chemistry, Institute of  
Chemical Physics, Academy of Sciences of the USSR (Moscow), Institute of  
Chemical Physics, Academy of Sciences of the USSR (Moscow), Institute of  
Chemical Physics, Academy of Sciences of the USSR (Moscow)

SUBMITTED: May 11, 1960

Card 3/3

STERIN, K.H.YE.



Contact Transformation of Cyclohexane in the  
Presence of Platinum Charcoal

5/22/60/15/52/520/516  
5016/5032

ASSOCIATION: Kuznetsovskiy gosudarstvennyy universitet im. N.Ye. Zhukovskogo  
(Moscow State University) imeni N.Ye. Zhukovskogo, Kuznetsovskiy  
spektroskopicheskii nauchnyy tsentr (Commission of  
Spectroscopy of the Academy of Sciences), Institut  
fizicheskoy khimii (Institute of Physical Chemistry),  
Moskva (Moscow), U.S.S.R.  
E. D. Zaitsevskiy of the Academy of Sciences U.S.S.R.

SUBMITTED: July 28, 1960

Card 4/4

LANDSBERG, G.S., akad. [deceased]; MAYANTS, L.S., doktor fiziko-matem. nauk;  
BATUYEV, M.I., doktor khim. nauk; BARYSHANSKAYA, F.S., kand. fiziko-  
matem. nauk; STERIN, Kh.Ya., kand. fiziko-matem. nauk; ARANOVICH, P.M.,  
kand. khim. nauk; BYALOVA, V.V., mlad. nauchnyy sotr.; ROTKOVA, S.V.,  
mlad. nauchnyy sotr.; RABINOVICH, N.Ya., mlad. nauchnyy sotr.; BERK-  
GAUT, V.G., red. izd-va; GOLUB', S.P., tekhn. red.

[Scattering of light and infrared spectroscopy; bibliographic index  
for 1928-1940] Rasseianie sveta i infrakrasnaia spektroskopiia;  
bibliograficheskii ukazatel' 1928-1940. Moskva, Izd-vo Akad. nauk  
SSSR, 1961. 451 p.  
(MIRA 14:11)

1. Akademiya nauk SSSR. Komissiya po spektroskopii. Sektor seti  
spetsial'nykh bibliotek.  
(Light—Scattering—Bibliography) (Spectrum, Infrared—Bibliography)



ALEKSANYAN, V.T.; STERIN, Kh.Ye.; UKHOLIN, S.A.; BRAGIN, O.V.;  
LIBERMAN, A.L.; MIKHAYLOVA, Ye.A.; SMIRNOVA, E.N.; TYUN'KINA, N.I.  
KAZANSKIY, B.A.

Raman spectra of certain hydrocarbons of the benzene series  
havong one or two side chains. Izv. AN SSSR. Otd.khim.nauk  
no.8:1437-1443 Ag '61. (MIRA 14:8)

1. Komissiya po spektroskopii AN SSSR i institut organicheskoy  
khimii im. N.D. Zelinskogo AN SSSR.  
(Hydrocarbons—Spectra)

STERIN, Kh.Ye.; ALEKSANYAN, V.T.; UKHOLIN, S.A.; BRAGIN, O.V.;  
GAVRILOVA, A.Ye.; ZOTOVA, S.V.; LIBERMAN, A.L.; MIKHAYLOVA, Ye.A.  
SMIRNOVA, E.N.; STERLIGOV, O.D.; KAZANSKIY, B.A.

Raman spectra of some tri- and tetraalkylbenzenes and condensed  
aromatic hydrocarbons. Izv. AN SSSR. Otd.khim.nauk no.8:1444-  
1450 Ag '61. (MIRA 14:8)

1. Komissiya po spektroskopii AN SSSR i Institut organicheskoy  
khimii im. N.D. Zelinskogo AN SSSR.

(Benzene--Spectra)

(Hydrocarbons--Spectra)

S/020/61/136/005/019/032  
B103/B208

AUTHORS: Khromov, S. I., Shokova, E. A., Sterin, Kh. Ye., and  
B. A. Kazanskiy, Academician

TITLE: Contact conversions of cyclooctane in the presence of a  
nickel catalyst

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 5, 1961, 1112-1115

TEXT: The authors studied the conversions of cyclooctane on a catalyst consisting of 50% nickel on kieselguhr, a) at 250°C, and b) at 250°C in an intense hydrogen stream. In case a) ~ 61% of cyclooctane was converted, in case b) ~ 81%. The composition of the fractions obtained by distillation of the final catalyzates was studied by means of Raman spectra (methods described previously in Ref. 7). The authors concluded from the results that three processes take place at the rather mild temperatures applied: 1) hydrogenolysis of the 8-membered ring giving n-octane (in analogy to an identical process with substances with smaller rings, Refs. 2-5), which was detected for the first time by the

Card 1/6

Contact conversions of cyclooctane ...

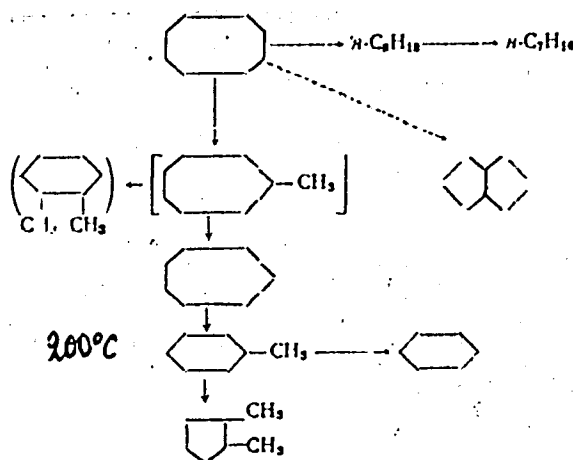
S/020/61/136/005/019/032  
B103/B208

authors; 2) a transannular dehydrogenation which yields cis-pentalane, and 3) a stepwise isomerization of cyclooctane to compounds with 7-, 6-, and 5-membered rings. At 200°C, the following compounds were formed: n-heptane, cyclohexane, methyl cyclohexane, cyclopentane, and cis-1,2-dimethyl cyclopentane. The latter may be formed as a result of the afore-mentioned isomerization. About 46.5 wt% fall to the share of the unreacted cyclooctane. Very small quantities of cis-bicyclo-(0,3,3)-octane-(cis-pentalane) were also found. On the basis of these results the authors suggested the reaction scheme at 200°C.

Card 2/6

Contact conversions of cyclooctane ...

S/020/61/136/005/019/032  
B103/B208



Card 3/6



Contact conversions of cyclooctane ...

S/020/61/136/005/019/032  
B103/B208

The reaction temperature was found to play an important part in the quantitative interrelation of the afore-mentioned three processes at 200 and 250°C. Marked hydrogenolysis of cyclooctane occurs only at 200°C, and practically ends at 250°C. The formation of pentalane, on the other hand, is characteristic mainly of 250°C. The ring isomerization which is accompanied by hydrocracking takes place both at 200 and 250°C, but is in addition complicated at 250°C by an aromatization of hexamethylene hydrocarbons. The authors assume that small quantities of cis-1,2-dimethyl cyclopentene are formed at 250°C owing to competitive processes: from methyl cyclohexane, the latter compound is formed on the one hand, benzene and toluene on the other hand, with the equilibrium being shifted toward the latter two. No aromatization occurs at 200°C. The transannular dehydrogenation of cyclooctane to cis-pentalane, and the isomerization of the hydrocarbons also take place on platinized carbon, but at a higher temperature (310°C, Refs. 6,7). The experiments of the authors showed that this does not apply to cyclooctane at 200-250°C. There are 4 tables and 8 references: 4 Soviet-bloc and 2 non-Soviet-bloc.

Card 5/6

Contact conversions of cyclooctane ...

S/020/61/136/005/019/032  
B103/B208

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V.  
Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: November 11, 1960

Card 6/6



MIRZAYEVA, A.K.; YELAGINA, N.V.; STERIN, Kh.Ye.; KAZANSKIY, B.A.

Catalytic conversions of spiro (4,5)decane on a platinum catalyst.  
Neftekhimia 2 no.1:31-36 Ja-F '62. (MIRA 15:5)

1. Moskovskiy gosudarstvennyy universitet, kafedra khimii nefti,  
i Komissiya po spektroskopii AN SSSR.  
(Spirodecane) (Catalysts, Platinum)

BALENKOVA, Ye.S.; KHROMOV, S.I.; SHOKOVA, E.A.; KUCHERYAVAYA, N.N.;  
STERIN, Kh.Ye.; KAZANSKIY, B.A.

Catalytic conversions of cycloheptane. Neftekhimiia 2 no.3:  
275-279 My-Je '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova i  
Komissiya po spektroskopii AN SSSR.  
(Cycloheptane) (Catalysis)

SHOKOVA, E.A.; KHROMOV, S.I.; BALENKOVA, Ye.S.; BOBROV, A.V.; STERIN,  
Kh.Ye.; KAZANSKIY, B.A.

Catalytic conversions of cyclononane and cyclodecane in the  
presence of nickel catalyst. Neftekhimiia 2 no.3:280-287  
My-Je '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova i  
Komissiya po spektroskopii AN SSSR.  
(Cyclononane) (Cyclodecane) (Nickel catalysts)

KORITSKIY, V.; STERIN, Kh. V.

Fourteenth Conference on Spectroscopy. Opt. i spektr. 12  
no. 5:662-664, My '62. (MIRA 15:5)  
(Spectroscopy--Congresses)

STERIN, Kh.Ye.; ALEKSANYAN, V.T.

Investigation of the composition of products of catalytic transformations  
of hydrocarbons based on Raman spectra. Izv. AN SSSR Ser. fiz. 26' ..  
no.10:1319-1320 0 '62. (MIRA 15:10)  
(Hydrocarbons) (Catalysis) (Spectrum analysis)

S/020/62/144/001/010/024  
B104/B102

AUTHORS: Bobrov, A. V., Sterin, Kh. Ye., and Sobolev, Ye. V.  
TITLE: Depolarization degree of Raman spectrum lines of hydrocarbons with conjugate double bonds  
PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 1, 1962, 81-84

TEXT: The degree  $\rho$  of depolarization of the  $\Delta\nu_s(C=C)$  lines (symmetric stretching vibrations) of hydrocarbons was measured by means of a photographic equipment with an inclined illuminator. The polarized component was separated with an Osipov prism (Ya. S. Bobovich, M. V. Vol'kenshteyn, Izv. AN SSSR, ser. fiz., 12, 553 (1948)). Known lines of benzene, cyclohexane, and  $CCl_4$  were used as reference lines. The ratio between the components of the  $\alpha^{*}$  tensor is assumed to be equal in cis- and trans-bonds (Fig. 1). Taking account of the axial symmetry of  $\alpha^{*}$ , the ratio  $\alpha_1^{*}/\alpha_3^{*} = (1 - \sqrt{5\rho/(6-7\rho)}) / (2\sqrt{5\rho/(6-7\rho)} + 1)$  is calculated

Card 1/2

Depolarization degree of Raman ...

S/020/62/144/001/010/024  
B104/B102

from the  $\rho$ -values of trans-isomers of one conjugate C=C bond, and  $\rho$  of cis-isomers is calculated from this ratio. From  $\rho$ -values of trans-isomers of butadiene-1,3 and hexadiene-2,4 the  $\rho$ -values of the cis-isomer of these hydrocarbons were calculated in the above way. The results agree well with measurements of cyclopentadiene-1,3 and cycloheptadiene-1,3. There are 2 figures and 1 table.

ASSOCIATION: Komissiya po spektroskopii Akademii nauk SSSR  
(Commission of Spectroscopy of the Academy of Sciences USSR)

PRESENTED: December 14, 1961, by I. V. Obreimov, Academician

SUBMITTED: December 12, 1961

Card 2/3

BOEROV, A.V.; STERIN, Kh.Ye.

Spectroscopic study of the mutual orientation of phenyl rings  
in biphenyl molecules. Opt. i spektr. 15 no.1:130-131 J1 '63.  
(MIRA 16:8)

(Biphenyl---Spectra)



PHILIPIN, G.M.; OTTUN, E.Ye.; ALPANYAN, V.T.; VAKHA, A.V.; GIBERMAN, A.S.

Configuration of stereoisomers in a series of cis- and  
trans-1-methyl-3-n. alkylcyclohexanes. Neftokhimiya 4 no.2:  
219-224 Mr-Ap'64 (MIRA 17:8)

1. Komissiya po spektroskopii AN SSSR i Institut organicheskoy  
khimii AN SSSR imeni M.D. Zelinskogo.

YELAGINA, N.V.; LIRDAYEVA, A.K.; STEIN, Kh.Ye.; BOBLOV, A.V.; KAZANSKIY,  
B.A.

Catalytic conversion of spiro-(5,6)-dodecane on a platinum  
catalysts. Neftekhimiya 4 no.2:241-245 Mar-Apr'64 (MIRA 17:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

MIRZAYEVA, A.K.; YELAGINA, N.V.; STERIN, Kh.Ye.; BOBROV, A.V.; KAZANSKIY, B.A.

Catalytic convers' ns of n-a-yl benzene on a platinum catalyst.  
Neftekhimia 4 no.3:417-420 My-Je '64. (MIRA 18:2)

1. Kafedra khimii nefti Moskovskogo gosudarstvennogo universiteta  
i Komissiya po spektroskopii AN SSSR.

L 51812-65 EWT(m)/EPF(c)/EPR/ENP(j)/T/ Pc-l/Pr-l/Ps-l WW/RM

ACCESSION NR: AP5017011

UR/0204/64/004/006/0819/0823

AUTHOR: Plate, A. F.;Gusar', N. I.; Belikova, N. A.; Sterin, Kh. Ye.

TITLE: Hydrogenolysis and pyrolysis of bicyclo-(3,2,0)-heptane

SOURCE: Neftekhimiya, v. 4, no. 6, 1964, 819-823

TOPIC TAGS: heptane, hydrogenation, pyrolysis, catalysis, cyclic group

ABSTRACT: Hydrogenolysis of bicyclo-(3,2,0)-heptane on platinized charcoal begins at 100° and goes almost to completion at 150°, forming ethylcyclopentane (49%), cycloheptane (44%), and trans-1,2-dimethylcyclopentane (7%). In the presence of nickel-on-kieselguhr, complete hydrogenolysis of bicyclo-(3,2,0)-heptane takes place at 110°, resulting in the formation of ethylcyclopentane (50%), cyclopentane (20%), and trans-1,2-dimethylcyclopentane (28%). The carrier, kieselguhr, does not catalyze the conversion of bicyclo-(3,2,0)-heptane. Formation of the trans-isomer of 1,2-dimethylcyclopentane was explained by conversion of the cis-isomer originally formed, at the reaction temperature. In a study of the behavior of bicyclo-(3,2,0)-heptane under conditions of catalytic isomerization on platinized charcoal (in the absence of hydrogen), the hydrocarbon remained stable up to 250°, and cleavage of the cyclobutane

Card 1/2

L 51812-65

ACCESSION NR: AP5017011

ring occurred to an extent of only 14% at 350°. In the absence of a catalyst, pyrolysis does not begin at temperatures below 450°; at 500°, bicyclo-(3,2,0)-heptane is 15% decomposed, while at 550° the decomposition goes to completion. The pyrolysis products at 500°, after hydrogenation, contained the initial hydrocarbon, 6-7% cyclopentane, and 7-8% n-heptane. The pyrolyzate obtained at 550° represented a complex mixture: after hydrogenation, n-pentane, isopentane, cyclopentane, n-heptane, trans-1,2-dimethylcycloheptane, ethylcyclopentane, a few aromatic compounds, and the initial bicyclo-(3,2,0)-heptane were found; the gas formed in the decomposition contained 80% ethylene and an admixture of methane and hydrogen. Orig. art. has: 2 formulas, 3 tables. 5

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University); Komissiya po spektroskopii AN SSSR (Spectroscopy Commission, AN SSSR)

SUBMITTED: 12Jun64

ENCL: 00

SUB CODE: 00, GC

NO REF SOV: 006

OTHER: 002

JPES

9/12/2  
Card

L 12907-65 EWT(1)/EEC(t) IJP(c)/AFWL/AS(mp)-2/RAEM(a)/ESD(gs)/ESD(t)

ACCESSION NR: AP4047175

S/0051/64/017/004/0532/0537

AUTHORS: Bobrov, A. V.; Sterin, Kh. Ye.

TITLE: Comparison of line intensity in Raman spectra of powders

SOURCE: Optika i spektroskopiya, v. 17, no. 4, 1964, 532-537

TOPIC TAGS: Raman spectrum, line intensity, powder, hyposulfite, urea, Rochelle salt, naphthalene, stilbene

ABSTRACT: The behavior of the intensities of Raman scattering lines of colorless powders was investigated in transmitted light. The substances investigated were hyposulfite, urea, Rochelle salt, naphthalene, stilbene, and tolane. The substances were pulverized and sifted to make sure that the fractions are within equal limits. The powders were placed in a special cuvette in the form of a hollow cone. The contours of the measured Raman line and of the attenuated excited line ( $\lambda = 4358 \text{ \AA}$ ) were recorded with a DFS-12 spectrometer.

Card 1/3

L 12907-65

ACCESSION NR: AP4047175

The measure of the intensity was the ratio

$$I = \frac{J_p}{T J_s} = \frac{S_p}{S_s}$$

where T -- transmission coefficient of the attenuating optical filter,  $S_p$  -- area under the contour of the Raman scattering line, and  $S_s$  -- area under the contour of the attenuated exciting line. The ratios I of lines of any two substances taken for identical powder fraction dimensions and other equal conditions turned out to be equal, within the measurement accuracy. The ratios I of the lines of two elements obtained from the spectra of powders and from spectra of solid blocks were also practically the same. It is therefore concluded that the values of I can be used for a comparison of the intensity of lines in spectra of powders which are not mixed with each other. It was also found that the intensity of the Raman lines in binary mixtures of powders is proportional to the concentrations of the components. Tests based on the use of a mixture of components are as compared with those using unmixed components

Card 2/3

L 12907-65

ACCESSION NR: AP4047175

(method of internal standard vs. method of external standard). Orig.  
art. has: 2 figures, 5 formulas, and 4 tables.

ASSOCIATION: None

SUBMITTED: 06Dec63

ENCL: 00

SUB CODE: OP

NR REF SOV: 003

OTHER: 006

Card 3/3



BOBROV, A.V., STERIN, Kh.Ye.

Spectroscopic study of the change in conjugation due to the  
transition from the crystalline to the liquid state. Opt.  
1 spektr. 17 no.4:625-626 0 '64. (MIRA 17:12)

BEREZHINA, N.A.; PLATE, A.S.; TALIKINA, G.M.; STERIN, Kh.Ye.; LUKASHINA, V.M.;  
PAKHOMOV, V.P.; BERELKIN, V.G.

Isomeric transformations of unsaturated hydrocarbons of the  
bicyclo (2,2,1) heptane series in the presence of calcium amide  
and an aluminocenium catalyst. Zhur.org.khim. 1 no.3:50c-513  
No 167. (MIRA 18:4)

1. Moskovskiy gosudarstvennyy universitet, Institut nefte-  
khimicheskogo sinteza AN SSSR i Komissiya po spektroskopii  
AN SSSR.

STERIN, Kh.Ye.; BOBROV, A.V.; ZHIZHIN, G.N.

Low-frequency vibration of cyclohexane. Opt. i spektr. 18 no.5:904-  
905 My '65. (MIRA 18:10)

ZHIZHIN, G.N.; STERIN, Kh.Ye.

Infrared absorption spectra of cyclohexane and its symmetrically  
substituted at low temperatures. Opt. i spektr. 19 no.1:55-64  
Jl '65. (MIRA 18:8)

LIBERMAN, A.L.; LERMAN, B.M., ZHIZHIN, G.N.; STERIN, Kh.Ye.

Sequence of the boiling points of stereoisomeric 1-methyl-  
and 1-ethyl-4-tert-butylcyclohexanes. Dokl. AN SSSR 156  
no. 2:375-378 My '64. (MIRA 17:7)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.  
Predstavleno akademikom B.A.Kazanskim.

ZHIZHIN, G.N.; STERIN, Kh.Ye.; ALEKSANYAN, V.T.; LIBERMAN, A.I.

Spectroscopic investigation of the space configuration of dialkylcyclohexanes. Part 1: Spectral sign of cis-trans isomerism. Zhur.strukt.khim. 6 no.5:684-690 S-0 '65.

(MIRA 18:12)

1. Komissiya po spektroskopii AN SSSR i Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR. Submitted April 5, 1965.

LAPSHIN, N.P.; CHELNOKOVA, L.M., inzhener; YEFIMOV, A.A., nachal'nik len-  
tochno-rovnichnogo tsekha; STERIN, L.I.; RATOVA, N.S.; NOVIKOV, N.V.;  
KABANOVA, Ye.V.; BASHKIN, A.P.; KLEYENKINA, L.G.; IVANOV, N.Ye.;  
YUSHAKOV, A.N., inzhener.

Readers' efficiency suggestions. Tekst.prom.17 no.1:37-43 Ja '57.  
(MLRA 10:2)

1. Fabrika "Krasnaya Talka (for Chelnokova). 2. Prepodavatel'  
Morskanskogo tekstil'nogo tekhnika (for Sterin). 3. Nachal'-  
nik otdel'nogo tsekha Shuyskoy ob'yedinennoy fabriki (for Iva-  
nov).

(Textile industry)

STERIN, Ya.I.; DISMAN, Ye.M., Inzh.

Machine for unwinding, straightening and laying of tubular knit fabrics. Tekst.prom. 25 no.1:51 Ja '65.

(MIRA 18:4)

1. Nachal'nik nauchno-issledovatel'skogo sektora tresta  
"Promtekhmontazh" Ministerstva stroitel'stva Latvyskoy SSR  
(for Sterin).



GINZBURG, Zinoviy Borisovich; TSEPLIN, A.M., redaktor; NADBAKH, M.P.,  
retsensent; STERIN, Ye.M., retsensent; PITERMAN, Ye.L., redaktor;  
KOLASNIKOVA, A.P., tekhnicheskii redaktor;

[Movable electric power stations] Peredvishnye elektrostantsii.  
Moskva, Goslesbumizdat, 1955. 254 p. (MLRA 9:2)  
(Electric power plants)

VENTSER, Yu.I., KOLOBOVA, Z.A.; STERINA, R.M.

Mechanism of the flocculating action of industrial polyacrylamide.  
Nauch. trudy AKKH no.22:19-36 '63. (MIRA 18:5)

VEYTSEK, Yu.I., kand. khim. nauk; STORINA, I.M., inzh.

Cation flocculants for drinking water purification. Vol. 1 san. tekhn.  
no.9:14-16 S '65. (ISSN 12:9)

Stirina, Ye. Z.

Derzhovskaya, R. I., Skarpe, O. K., Moskalenskaya, E. Ya. and Stirina, Ye. Z. -  
"The study of the mechanism in the tautomeric change of nitro compounds by the  
isotopic method," (In the index fourth author: Stirina, Ye. Z.), Nauch. zapiski  
(Dnepropetr. gos. un-t), Vol. XXXIII, 1982, p. 111-114

SC: U-5240, 17, Dec. 53, (Letopis 'Zhurnal 'nykh Statey, No. 25, 1949).